

Additions to the Primula-Flora of Tibet

BY

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I am indebted to the Keeper of Botany, British Museum, for the opportunity of examining herbarium material of *Primula* collected in Eastern Tibet in 1936 by Mr. J. Hanbury-Tracy. The area of exploration extends from Lat. $28^{\circ} 30' N.$, Long. $97^{\circ} E.$ obliquely N. to Lat. $31^{\circ} 50' N.$, Long. $94^{\circ} E.$ It lies therefore at some distance from the country visited by Messrs. Ludlow and Sherriff in the same year—see Notes Roy. Bot. Gard. Edin. xix (1937), 199. Of the species found some indicate relationship with the flora of Kansu and Szechwan—*P. advena*, *P. gemmifera*; the S.W. Szechwan and W. Yunnan association comes out in *P. articulata*, *P. ingens*, *P. sinoplantaginea*, *P. vittata*; a Himalayan connection is indicated by *P. crispata*, *P. Jonarduni*, *P. tibetica*. Diagnoses are given of three new species and a few varieties.

BULLATAE.

Primula articulata W. W. Sm. Sp. nov.

Species affinis *P. tapeinae* Balf. f. et Forrest a qua foliis anguste spathulatis pilis longis articulatis glanduloso-capitatis fere ex toto dense indutis, floribus flavidis inter alia divergit.

Planta nana suffruticosa ad 2.5 cm. vel paulo ultra ascendens dense caespitosa glebam 30 cm. diametro formans, rhizomate valido lignoso ad 10 cm. longo incrementis annuis brevibus articulato foliorum delapsorum basibus bene induto vel nunc fere nudo. Folia petiolata 2–3 cm. longa; lamina circ. 5 mm. lata, anguste spathulata vel oblanceolata in petiolum anguste alatum et glandulosum et farinosum laminam subaequantem angustata, supra pilis articulatis glandulosis induta, subtus dense albo-farinosae atque praesertim ad costam venasque glanduloso-pilosa, apice rotundata vel obtusa, margine subintegra vel paulo repanda. Inflorescentia circ. 2.5 cm. alta, pedunculo 7–8 mm. longo glanduloso, floribus binis, bracteis circ. 4 mm. longis cum pedicellis 6–7 mm. longis glanduloso-pilosis. Calyx anguste campanulatus 6–7 mm. longus dense glanduloso-pilosus atque leviter farinosus in lobos anguste ovatos subacutos ad medium fissus. Corollae flavae tubus 1–2 cm. longus e calyce longe exsertus extra farina conspersus, lobi obcordati circ. 1 cm. diametro alte emarginati. Ut videtur,

[Notes, R.B.G., Edin., No. XCV, July 1938.]

stamina atque ovarium eis *P. tapeinae* subsimilia, floribus ad dissectionem haud sufficientibus.

"EASTERN TIBET.—Lho Dzong, Kham. Alt. 12,600 ft. Light dry soil in rock crevices, open grass country. Yellow colour. Grows in clumps often 1 ft. in diameter, 1-2 inches high. 12th May 1936." J. Hanbury-Tracy, No. 119. Typus in Herb. Mus. Brit.

Var. *sublinearis* W. W. Sm.

A typo foliis fere linearibus, pedunculo subnullo, floribus haud flavidis inter alia differt.

Of similar habit to the type, found at the same place and at the same elevation. Flowers magenta colour. 11th May 1936. J. Hanbury-Tracy, No. 117. Typus in Herb. Mus. Brit.

Certainly a close ally of *P. tapeina* and the equivalent of that species in the dry Tibetan upland. The rhizome is unlike that of its ally in appearance, the whole plant is very densely glandular with articulated hairs, and the flower-colour is not that of *P. tapeina*. The variety is further away from that species. For several of the species in this section there is great need of ampler material for elucidation. It is not yet clear how far presence or absence of farina, presence or absence of glandular hairs, and colour of flower are adequate criteria.

CANDELABRA.

P. melanodonta W. W. Sm. in Notes Roy. Bot. Gard. Edin. xv (1927), 303.

"S.E. TIBET.—Dzogu La, Zayul District. Alt. 13,000 ft. Moist earth close to streams. Open scrub-covered country. Yellow colour. Height 3-4 inches. 29th June 1935." J. Hanbury-Tracy, No. 147.

Found previously only by Kingdon Ward in the Seinghku Valley.

CAPITATA.

P. crispata Balf. f. et W. W. Sm. in Notes Roy. Bot. Gard. ix (1916), 162.

"S.E. TIBET.—Chumnyö Valley, Zayul District. Alt. 12,000 ft. Light dry soil. Pine forest. Deep red colour. Height about 9 inches. 29th Sept. 1936." J. Hanbury-Tracy, No. 38.

Recorded from S. Tibet, Bhutan, Sikkim, and Nepal.

DRYADIFOLIA.

P. Jonarduni W. W. Sm. in Rec. Bot. Surv. India iv (1911), 269.

"EASTERN TIBET.—Valley of Dü Chu, Pashö District, Kham. Alt. 14,000 ft. Light dry soil. Open grass country devoid of undergrowth.

Deep magenta colour. Grows in the form of a moss. 13th July 1936." J. Hanbury-Tracy, No. 36.

Recorded previously from Bhutan and S. Tibet.

FARINOSAE.

P. gemmifera Batal. in Act. Hort. Petropol. xi (1891), 491.

"EASTERN TIBET.—Wa La, Pashö District, Kham. Alt. 15,000 ft. Light dry soil. Open scrub-covered country. Mauve colour. Height 4-5 inches. 29th June 1936." J. Hanbury-Tracy, No. 205.

Recorded from the provinces of Kansu and Szechwan, West China.

P. tibetica Watt in Journ. Linn. Soc. xx (1882), 6.

"EASTERN TIBET.—Hladzong, Kham. Alt. 12,600 ft. Moist earth close to streams. Open pasture ground. Magenta colour. Height 1 inch. 11th May 1936." J. Hanbury-Tracy, Nos. 116, 149.

Recorded from Sikkim and from S. and S.E. Tibet.

NIVALES.

Primula advena W. W. Sm. Sp. nov.

Species valde affinis *P. szechuanicae* Pax a qua inflorescentiis farina conspersis, pedicellis gracilioribus, calyce dense nigro-maculato nec quasi-pellucido, corollae tubo angustiore purpureo-tincto, fructu haud longe e calyce exserto recedit.

Planta robusta 30-50 cm. alta, habitu *P. szechuanicae*, rhizomate brevi crasso, radicibus numerosis fibrosis, squamis basalibus in sicco papyraceis. Folia petiolo laminam subaequante latissime alato suffulta; lamina 10-12 cm. longa, 2.5-5 cm. lata, oblanceolata vel obovata, apice obtusa vel nunc rotundata, basi in petiolum haud discretum sensim angustata, margine aequaliter serrata, in sicco papyracea, glabra, in planta typica efarinosa, supra laete viridis, infra olivacea, costa latiuscula, venis vix prominulis. Scapus folia duplo superans, glaber, ad apicem sparsissime farinosus, umbellis solitariis vel plerumque 2-3 superpositis; pedicelli 2-4 cm. longi, graciles, sparse farinosi vel nunc efarinosi; bracteae sublineares 5-15 mm. longae basi latiusculae apice caudato-acuminatae, ad margines inferiores saepe farinosae. Flores in umbella quaque 8-12, flavidi, fragrantissimi. Calyx anguste campanulatus, circ. 1 cm. longus, atrovirens, nigro-maculatus, in lobos lanceolatos acuminatos margine farina conspersos ad trientem fissus. Corollae anguste infundibularis tubus fere 2 cm. longus, purpureus, lobi circ. 8 mm. longi, oblongi vel ovati, obtusi, reflexi ut in *P. szechuanica*. In flore brevistylis staminum filamenta a basi tubi 12 mm. inserta; stylus 3 mm. longus; ovarium globosum. Fructus (ex reliquiis) e calyce paulo exsertus cylindricus.

"S. TIBET.—Takar La, W. Tsari. Alt. 14,000 ft. Corolla a pale

yellow green, rather more yellow than green. Tube purple. Calyx dull dark red green. The most fragrant *Primula* I have ever seen. The tube is only seen in some specimens owing to the long calyx and the claws being reflexed on to it. The back of many leaves is distinctly purple, though most are green. On river banks and hillsides, always partly under dwarf Juniper or other screens. 28th June 1936." Ludlow and Sherriff, No. 2242. Typus in Herb. Mus. Brit.

"S.E. TIBET.—Near Pamchi, Lilung Valley. Alt. 13,500 ft." Ludlow and Sherriff, No. 1848. Also Nos. 1589, 2682.

"S. TIBET.—Sanga Chöling. Alt. 14,000 ft. Flowers very fragrant. Amongst bushes on alpine slopes. 30th June 1935." F. Kingdon Ward, No. 11845.

Var. **concolor** W. W. Sm. Var. nov.

Corollae tubo limboque concoloribus distinguenda.

"S.E. TIBET.—Ata Kang La, Nagong. Alt. 14–15,000 ft." F. Kingdon Ward, No. 10592. Typus in Herb. Mus. Brit.

"S.E. TIBET.—Nam La. Alt. 12–14,000 ft." F. Kingdon Ward, No. 5972. (For details see Notes Roy. Bot. Gard. Edin. xv (1926), 80.)

Var. **argentata** W. W. Sm. Var. nov.

Foliorum marginibus farina ornatis, corollae tubo limboque concoloribus a typo divergit.

"EASTERN TIBET.—Valley of Dü Chu, Pashö District, Kham. Alt. 12,000 ft. Moist earth close to streams, very light pine forest. Yellow colour. Height about 9 inches. 4th July 1936." J. Hanbury-Tracy, No. 67. Typus in Herb. Mus. Brit.

Primula advena is a close ally of *P. szechuanica* Pax. This latter with the associated *P. Maximowiczii* Regel and *P. tangutica* Duthie are conspicuous among the Nivales by the absence of farina on leaves and inflorescence. Cf. Bot. Mag. sub tab. 9384. The specimens collected by Ludlow and Sherriff and cited above were previously referred to *P. szechuanica* as a variety, Notes Roy. Bot. Gard. Edin. xix (1937), 206. Similarly with Ward No. 5972 in *ibid.* xv (1926), 80. Further material, Ward Nos. 10592, 11845, and Hanbury-Tracy No. 67, tends to show that the difference between the Tibetan plant and *P. szechuanica* is more than varietal. Both show the high degree of reflexion of the corolla-lobes—previously known only in *P. szechuanica*. But in *P. advena* the pedicels are much more slender, the calyx is dissimilar, the corolla-tube narrower, the fruit smaller, while farina is usually present on the inflorescence, on the calyx-lobes, on the scales of the rootstock and sometimes on the leaf-margins. While *P. szechuanica* appears to be very consistent in its characters, *P. advena* varies somewhat in the amount of farina and in its location; the corolla-tube in the typical form is purple but of similar colour to the limb in the two varieties.

P. ingens W. W. Sm. et Forrest in Notes Roy. Bot. Gard. Edin. xiv (1923), 43.

"EASTERN TIBET.—Tinkha La, Lho Dzong District, Kham. Alt. 14,000 ft. Light dry soil. Open scrub-covered country. Mauve colour. Height about 15 inches. 21st June 1936." J. Hanbury-Tracy, No. 124. Previously recorded only from N.W. Yunnan.

P. sinoplanginea Balf. f. in Notes Roy. Bot. Gard. Edin. xiii (1920), 20.

"EASTERN TIBET.—Lho Dzong, Kham. Alt. 12,600 ft. 20th May 1936." J. Hanbury-Tracy, No. 126. Known previously from Szechwan, Yunnan, and the Chinese-Tibet frontiers.

OBTUSIFOLIA.

P. Jaffreyana King in Journ. Asiat. Soc. Bengal, lv (1886), 228.

"EASTERN TIBET.—Pashō District, Kham. Alt. 12,000 ft. Light dry soil, often on rock crevices. Found in open scrub-covered country, devoid of trees. Magenta colour. Height 3-4 inches. 21st July 1936." J. Hanbury-Tracy, No. 3. Also in Lho Dzong District. 20th May. No. 128.

Recorded only from Tibet.

SIKKIMENSIS.

Primula sikkimensis Hook. var. *lorifolia* W. W. Sm. Var. nov.

A typo foliis loriiformibus vel lineari-lanceolatis ad 18 cm. longis circ. 1 cm. latis textura firme papyraceis margine subintegris divergit.

"EASTERN TIBET.—Lho Dzong, Kham. Alt. 12,600 ft. Moist earth close to streams. Open scrub-covered country or very light forest. Yellow colour. Height 9-10 inches. 12th June 1936." J. Hanbury-Tracy, No. 176. Specimen unicum in Herb. Mus. Brit.

The flowers of this plant are indistinguishable from those of high elevation forms of *P. sikkimensis*. They are smaller than those of the typical plant of Hooker. They correspond in size and structure to what is seen in *P. pudibunda* W. W. Sm. But the leaves are unlike those of any member of the Sikkimensis Section—they are very narrow in proportion to their length and the margins are only faintly serrate.

P. vittata Bur. et Franch. in Journ. de Bot. v (1891), 96.

"EASTERN TIBET.—Dora La, Pashō District, Kham. Alt. 14,500 ft. Moist earth, open scrub-covered country or light forest. Deep red colour. Height 5-6 inches. 24th June 1936." J. Hanbury-Tracy, No. 48.

Found in Szechwan, Yunnan, and on the Chinese-Tibet frontiers.

SOLDANELLOIDES.

Primula Sandemaniana W. W. Sm. Spec. nov.

Species sectionis Soldanelloides habitu floribusque *Primulae Wattii* King valde affinis a qua foliis breviter petiolatis, scapo ex toto farinoso, calyce corollaque bene farinosis inter alia divergit.

Herba gracilis pulcherrima. Folia dense rosulatum disposita efarinosa; lamina 4-7 cm. longa, 2-3 cm. lata, elliptica vel oblanceolata, apice obtusa vel rotundata, basi in petiolum sensim angustata, margine irregulariter atque nunc remote dentata, ibique pilis articulatis albidis nitentibus ciliata, supra pilis similibus bene obsita, infra sparsius nisi ad costam venasque crebre indutas; venae venulaeque supra impressae, superficiem rugosam in vivo exhibentes, infra prominentes; petiolus pro lamina brevis, nunc fere obsoletus, nunc 1-2 cm. longus, latiusculus vel paulo alatus, pilis multicellularibus bene instructus. Scapus ad 11 cm. altus, laminam longe superans, epilosus, undique leviter albo-farinosus, capitulum 3-5-florum (vulgo 3-florum paucis abortivis nunc additis) gerens; flores sessiles, nutantes, coerulescopurpurei; bractae 2-4 mm. longae, ovatae vel ellipticae, farina conspersae. Calyx 7-10 mm. longus, cupularis, in lobos subquadratos vel semi-orbiculares integros vel paulo dentatos (vel nunc alte) ad trientem fissus, viridis vel rubido-brunneus, extra farina conspersus, intus densius. Corolla late infundibuliformis, 1.75-2 cm. longa, 2-3 cm. lata; tubus calyce fere duplo longior, extra leviter farinosus; lobi rotundati vel late ovati, tandem bene patentes, apice emarginati, intus valde farinosi. Antherae in floribus brevistylis ad fauces tubi corollini insertae, in floribus longistylis ad medium tubum positae. Stylus in flor. longistylis paulo e tubo exsertus. Ovarium globosum, 2.5 mm. diametro. Fructus maturus deest.

S. TIBET.—Migyitun, Tsari. Alt. 13,500 ft.

In Notes Roy. Bot. Gard. Edin. xix (1937), 219, reference is made to certain specimens collected by Captain Sherriff under Nos. 2118, 2499, and 2796. These were found in the same area as *P. Cavendishiana* Ward, but the material was not adequate for determination. They appeared to be allied to that species and it was suggested that they represented some other species. Seeds, however, were secured and plants were raised to flowering stage in May 1938 under Nos. 1708 and 2796. These plants are quite distinct from *P. Cavendishiana* and find their nearest affinity in *P. Wattii* King. From that species *P. Sandemaniana* differs in the foliage and also in the farinose scape, calyx, and corolla. The specific name commemorates the late Mr. Frederick D. Stewart Sandeman, an enthusiastic and very successful cultivator of the genus. The type has been chosen from cultivated specimens under No. 2796, now preserved in Herb. Edin.